

## Effects of Huperzine A from *Serrate Clubmoss* Herb on Hippocampal Inflammatory Response and Neurotrophic Factors in Rats after Anesthesia

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**SUMMARY.** This study aimed to investigate the effects of huperzine A (HupA) on hippocampal inflammatory response and neurotrophic factors in aged rats after anesthesia. Thirty-six Sprague Dawley rats were randomly divided into control, isoflurane, and isoflurane+HupA groups; 12 rats in each group. The isoflurane+HupA group was intraperitoneally injected with 0.2 mg/kg of HupA. After 30 min, the isoflurane inhalation anesthesia was performed in the isoflurane and isoflurane+HupA groups. After 24 h from anesthesia, compared with isoflurane group, in isoflurane+HupA group the escape latency of rats was significantly decreased ( $P < 0.05$ ), the original platform quadrant residence time and traversing times were significantly increased ( $P < 0.05$ ), the central area residence time was significantly increased ( $P < 0.05$ ), the hippocampal tumor necrosis factor  $\alpha$ , interleukin 6, and interleukin 1 $\beta$  levels were significantly decreased ( $P < 0.05$ ), and the hippocampal nerve growth factor, brain derived neurotrophic factor, and neurotrophin-3 levels were significantly increased ( $P < 0.05$ ). HupA may alleviate the cognitive impairment in rats after isoflurane anesthesia by decreasing inflammatory factors and increasing neurotrophic factors in hippocampus tissue.

**RESUMEN.** Este estudio tuvo como objetivo investigar los efectos de la huperzina A (HupA) sobre la respuesta inflamatoria del hipocampo y los factores neurotróficos en ratas ancianas después de la anestesia. Treinta y seis ratas Sprague Dawley se dividieron aleatoriamente en grupos control, isoflurano e isoflurano+HupA; 12 ratas en cada grupo. El grupo de isoflurano+HupA fue inyectado intraperitonealmente con 0.2 mg/kg de HupA. Después de 30 min, la anestesia por inhalación de isoflurano se realizó en los grupos de isoflurano e isoflurano+HupA. Después de 24 h de la anestesia, en comparación con el grupo de isoflurano, en el grupo de isoflurano+HupA la latencia de escape de las ratas disminuyó significativamente ( $P < 0.05$ ), el tiempo de residencia del cuadrante de la plataforma original y los tiempos de desplazamiento aumentaron significativamente ( $P < 0.05$ ), el tiempo de residencia en el área del centro aumentó significativamente ( $P < 0.05$ ), los niveles de factor de necrosis tumoral del hipocampo  $\alpha$ , interleucina 6 e interleucina 1 $\beta$  disminuyeron significativamente ( $P < 0.05$ ) y el factor de crecimiento del nervio del hipocampo, factor neurotrófico derivado del cerebro y niveles de neurotrofina-3 se incrementaron significativamente ( $P < 0.05$ ). HupA puede aliviar el deterioro cognitivo en ratas después de la anestesia con isoflurano al disminuir los factores inflamatorios y aumentar los factores neurotróficos en el tejido del hipocampo.

**KEY WORDS:** anesthesia, cognitive function, huperzine A, isoflurane, rats.

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